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**THE DEFINITIVE
QL MAGAZINE**

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MAGAZINE



QUANTA

INFORMATION ON THE ASSOCIATION

Membership of QUANTA, the independent QL user group, is by annual subscription. The Membership Secretary can supply full details. Copies of the association's constitution & annual accounts are available from the Secretary.

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My last issue's editorial on the program listing size prompted a number of responses from readers, four in fact. This is the most response I have had to anything since taking the editorial slot a few years ago. The jury is still out on what final decision to make however as the response was split in a 50/50 tie over option 2 and 3. Some more thought needs to be made on how to take this forward.

I am pleased to say we have again some very interesting contributions in this issue, regarding the QL and software to get your juices flowing. You should check out our regular features too, many thanks to all who do write in and contribute to the magazine.

As I write this piece we learn of yet another "celebratory" death this year in the medium of entertainment. I of course refer to Muhammad Ali. Although a boxer in his profession, he was more than that, whether you liked or loathed him, he was outspoken, brash, funny, outspoken but could take a joke or two. There is a "Michael Parkinson" interview with him and Freddy Starr where Freddy Starr is telling Muhammad Ali a story about the Mafia, suffice to say it has an unexpected punchline. Please view it on YouTube when you get access to the Interweb at:

https://www.youtube.com/watch?v=xqr_FtlJEcg

Now you may be asking "Well what has this all got to do with the QL?", and my response to that is, you don't have to be a famous boxer to leave your mark in this world, write an article for QUANTA.

The Editor



If you have QL-related news items that you'd like us to include on this page, please get in touch with News Editor - Dilwyn Jones at news@quanta.org.uk

K E Y B O A R D M E M B R A N E S

Rich Mellor writes: QL keyboard membranes are available again from RWAP Software on SellMyRetro.com for £15 plus postage:

<http://www.sellmyretro.com/offer/details/new-sinclair-ql-keyboard-membrane-2340>



QL Keyboard Membrane

P H G T K U P D A T E

David Westbury has released an update to his JPEG, GIF and PNG conversion software. This latest release is able to render

complete frames of all known GIFs, rather than partial updates as in previous versions. Download PHGTK from:

<http://www.dilwyn.me.uk/graphics/index.html>

B A S I C L I N K E R

Wolfgang Lenerz has released the former commercial title Basic Linker as freeware through his website at:

<http://wlenerz.com/qlstuff>



Screen Shot of the program

It is a programming utility which lets you develop large BASIC programs as smaller modules, which it links and compiles using the Qliberator compiler. It has a requirement for the Menu Extension, Toolkit 2, QD Editor and Qliberator BASIC compiler. BASIC Linker can handle source BASIC files written in a text editor without line numbers, allowing for truly structured programs.

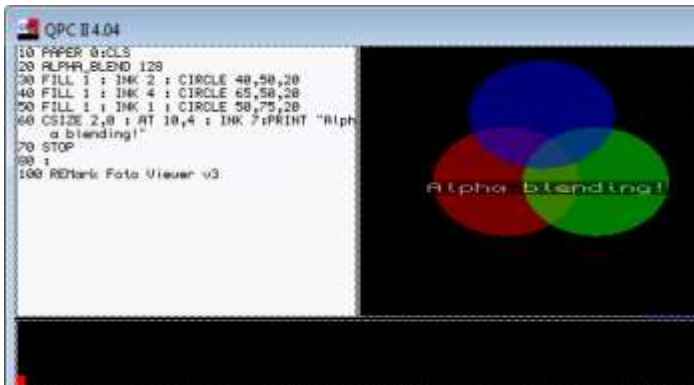
S M S Q / E V 3 . 2 6 R E L E A S E D

Version 3.26 of SMSQ/E for all platforms now available to download from SMSQ/E Registrar Wolfgang Lenerz's site at:

<http://www.wlenerz.com/smsqe/>

Following a proposal by Wolfgang Lernerz to add alpha-blending support for BLOCK graphics, Marcel Kilgus decided to extend it to the entire graphics sub-system (doesn't do things by half that lad!).

Alpha-blending is a method of drawing graphics whereby the resultant output is partly transparent – overlapping shapes and text created with BLOCK, LINE, CIRCLE, PRINT etc. will be see-through to a degree, set by a new command ALPHA_BLEND. This takes a value from 0 (fully transparent) to 255 (opaque), ALPHA_BLEND 128 will make all output half-transparent, for example.



Screen Shot

In the past, we have only had the variations offered by the OVER command, now we can achieve some pretty exciting graphical effects for use in games, for example. Here's a sample screen shot showing the results from Marcel's short BASIC program which draws three overlapping circles which are half-transparent.

In the screen shot, the circle is seen beneath, through the ones above, and the text printed is also partly transparent. By varying the ALPHA_BLEND value in line 20 you can see how adjusting the ALPHA_BLEND parameter varies the degree of transparency.

QUO VADIS
DESIGN

Independent Information
Technology Services

www.ql-qvd.com

QL/QDOS/SMSQ/E Software

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Welcome

Quo Vadis Design sells software for the Sinclair Quantum Leap computer (QL) and variants including a new OS called SMSQ/E.

The QL is a computer in its 25th year Anniversary.

See how the QL can be used in a modern environment.



Software emulations of the QL now exist which run on a PC/Mac with Windows/True or Mac Operating systems.

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04/04/2009
- Quo Vadis Design Website Launched
01/02/2009

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**QPC2 IS NOW FREE AND
AVAILABLE FROM MARCEL
KILGUS WEBSITE**

<http://www.kilgus.net/qpc/index.html>

Check the QL News Blog on
our website for updates.
www.ql-qvd.com/blog

A new trap #3 with D0=\$62, d1=alpha weight 0-255, d3.w=timeout and a0=channel ID allows the alpha-blend value to be set from assembler and other languages. Marcel has also implemented support for RENAME on a DOS device. Currently this only applies to QPC2. The SMSQ/E binaries and sources may be downloaded from Wolfgang's site (see above).

Q P C 2 V 4 . 0 4 R E L E A S E D

Marcel Kilgus has released version 4.04 of QPC2. Like the previous release, this one is free to download and use from Marcel's website.

There is quite a list of new and updated features, reflecting Marcel's ongoing commitment to both QPC2 and SMSQ/E. Support is now included for the new alpha-blending facilities in SMSQ/E v2.26, as well as:

- Completely rewrote the DOS device in C

- Fixed a problem in the DOS device in conjunction with filenames with a space at the end

- Finally implemented RENAME support for DOS devices on Windows Vista and above!

- Respect "Keep aspect ratio" when going into full-screen mode. This prevents double pixels on screens that are not divisible by 8 in x direction (e.g. 1366x768)

- Workaround for Windows problems with COM10 and higher

- Fixed SER_GETPORT\$ for COM10 and higher

- Fixed formatting DD floppy images

- Changed KEYROW to return 0 when QPC is not active (Windows driver)

Read all about Marcel's work producing this latest release on his blog entry at:

<http://www.kilgus.net/2016/04/23/new-qpc-v4-04-plus-smsqe-v3-26/>

In it, you will find that Marcel does not go for half measures – what started out as a relatively straightforward one-feature change (alpha-blended BLOCK fill commands) turned into an extension of the entire graphics sub-system.

A list of changes in each version of QPC2 is available at:

<http://www.kilgus.net/qpc/versions2/>

while the emulator itself and manuals may be downloaded from:

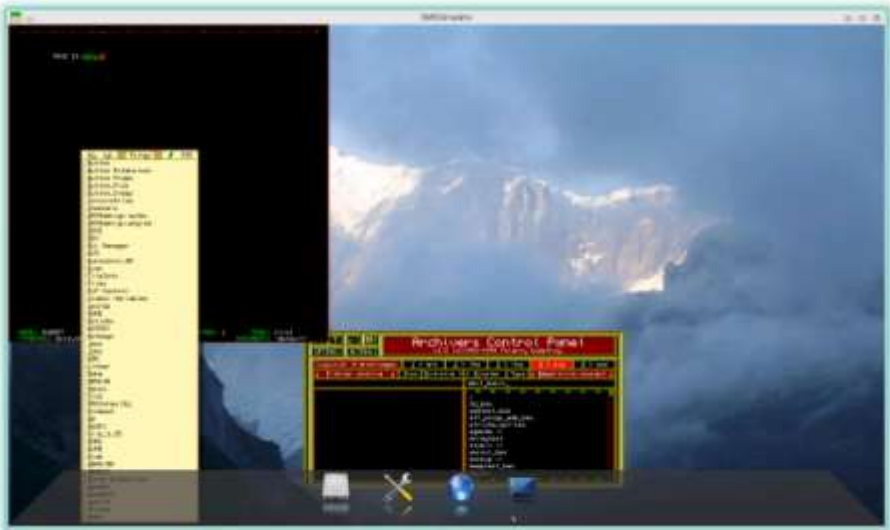
<http://www.kilgus.net/qpc/downloads/>

S M S Q M U L A T O R

Version 2.19 of this Java-based emulator has been released by Wolfgang Lenerz. As hinted at in the past, support for Java 6 has now been discontinued, so you will need Java 7 or later for this version of SMSQmuLator to work.

This version provides support for the new alpha-blend graphics and also implements so bug fixes and optimisations to parts of the emulator code. Download it from:

<http://www.wlenerz.com/SMSQmulator/>



Screen Shot

Q L MICRODRIVE SOFTWARE PRESERVATION

A number of Italian QL users have been engaged for a while in acquiring and preserving as much Microdrive software as possible. Giorgio Garabello conducted an interview with the person behind the programme, Simone Voltolini and the interview may be read (in English) on the website:

<http://www.hunggartorino.it/ql/ql-microdrive-software-preservation/>

In this article, they discuss the complications and problems involved in trying to recover images of the software from Microdrive. With help from QemuLator author Daniele Terdina, they use a program called mDump2 to quickly copy the content of a cartridge before the older ones disintegrate the felt pads after 3 to 4 readings, for example.

By clicking on the Main Menu link at the top, you can access a number of other articles such as information on the Black Phoenix software distribution, QHFT home accounting software and a few downloads. The site is available in both English and Italian.



Screen Shot of website

MGX ROM IMAGE

Thanks to the user 'smsq4ever' on QL Forum, we have been able to make available a copy of a QL ROM version called MGX. Basically, it's a patched MGF (French) ROM, which was altered to be able to use the second screen memory bank, which was done to allow for "real time" animations. The patched ROM was originally submitted to the French QL user group QLCF. It has both AZERTY and QWERTY keyboard versions for the second ROM half – supplied as two separate images.

Download from the QL ROMs page on my website at:

<http://www.dilwyn.me.uk/qlrom/index.html>

B M P & S C R C O N V E R S I O N S U P D A T E

This package available from the Graphics page on my website now includes a small improvement from Roberto Porro for better handling of green bits of a colour word when doing mode 32 graphics conversions.

<http://www.dilwyn.me.uk/graphics/index.html>

A L A N S U G A R A N D A M S T R A D / S I N C L A I R

Early April 1986 saw the official announcement of Amstrad's takeover of Sinclair Research and the end of the official Sinclair QL line. At <https://www.youtube.com/watch?v=1ZDhwFInsOs> you can see a video interview with Alan Sugar on the subject of the Sinclair takeover. There are short video clips of the Sinclair offices and production facilities. The video is about 4 minutes long.

Q L / E

On 14th April 2016, Urs König wrote:

QL/E v3.13 is out today. Major changes and enhancements are in the BOOT program. The start-up sequence has been reworked and enhanced to enable QL/E to also run on QPC1, uQLx (Raspberry PI), QL with QL-SD (should also run on the MIST) and Q-emuLator. As a goody QL/E now comes with Per Witte's D-Miner game and an adapted version of Francois Lanciault's 2048 game.

I'm not yet perfectly happy about how fast QL/E loads on original QLs and how stable it runs on such BBQLs (BBQL=Black Box QL). With 640KB or less QL/E is hardly usable. I recommend disabling all desktops but one (QTop is not that demanding). On QLs with Gold Card or Super Gold Card QL/E is quite usable. On QXL and all virtual QLs (emulators) QL/E rocks.

News Editor's note: QL/E is a ready to run QL environment with applications, desktops, games, tools, utilities. It comes preconfigured with a good selection of programs including a nicely set up desktop using QPAC, Qtop, Qascade and QDT, plus the operating system SMSQ/E.

<http://www.sinclairql.net/repository.html#QLE>

C U R S E S C O M P A N I O N D I S K

The main C68 issue disks contain the binaries and sources for the LIBCURSES library. This is additional material including documentation utilities and examples that may be useful to those who are trying to write new curses based programs. Note that the QDOS Curses implementation is directly based on the Unix/Posix definitions for such facilities so any material that refers to those variants should also be relevant to the QDOS implementation. For some time, it was thought that this package may have disappeared, as there was no working link to it from the website of the C68 designer. It has since been located and made available again from:

<http://www.dilwyn.me.uk/c/index.html>

M\$ BASIC CONVERSIONS AND DETOKENISING

There's a wealth of free BASIC listings out there on the web for computers which use older Microsoft-style BASICs. David Denham has released a lengthy document about converting older Microsoft-style BASIC programs to QL BASIC. Includes some hints in a separate document, and a set of procedures to provide commands with M\$ BASIC style naming to simplify the conversion as much as possible (e.g. string slicing functions called LEFT\$, MID\$ and RIGHT\$).

Presented as a Quill _doc file, the main document convert_doc is actually too large to load into standard Quill, you have to read it in Xchange Quill. For this reason, I've made an online html and PDF file version of the main document for those without Xchange.or who would rather just read it on their host machine if using an emulator.

The second part of the equation is that these BASIC programs may only exist in tokenised formats (i.e. not readable as plain text – you would need a copy of the original Microsoft BASIC interpreter to load them then save them out as plain text listings). Similar to the differences between a QSAVED _sav file in SuperBASIC and SBASIC if you wish.

Documentation on the format of these tokenised BASIC programs is available on the internet, so David took this information and wrote a small set of SuperBASIC programs to do the de-tokenising for you, plus notes on how to amend them for a particular version of BASIC once you have the correct notes for that format. The differences can arise because some computers may alter the tokens, or simply have different keywords for particular token values.

RWAP Software

We have been working hard to safeguard the future of the Sinclair QL through creating an online QL Wiki backed by a repository of QL titles.

The QL Wiki enables people to see what software and hardware was produced for the Sinclair QL. The repository enables people to purchase working copies when their microdrive cartridges fail, or they move onto disks or emulators. Where we can, we obtain permission from the copyright holders to re-release items on the market.

This has enabled us to bring some of the titles back to the market as well as re-kindle interest in the Sinclair QL and its emulators.

Old favourites brought back to life include:

E.V.A., Vroom
Black Knight, Double Block
Jungle Eddi, The Lost Pharaoh
Pangl, the Lonely Joker
Microdeal's Flight Simulator, QL Hopper, The King,
Night Nurse and Cuthbert in Space
Mortville Manor, Darkside of the Moon [£10]

We still retain our existing catalogue, including:

Open Golf, Return to Eden,
Stone Raider II, The Praws,
Hoverzone, Lost Kingdom of Zkul,
Deathstriks, Horrorday,
Flightdeck and QWord

All games are available on disk or for use with Q-emulator on the PC **from ONLY £5 each**

Microdrive versions also available - from £10 each.
Memory / system limits may apply - please check before ordering.

Visit the QL Wiki for more details on software, books and hardware for the Sinclair QL:

www.rwapadventures.com/ql_wiki

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Staffordshire ST11 9BA
Tel: 01782 398143
Email: rich@rwapservices.co.uk

Website:
www.rwapsoftware.co.uk or www.sellmyretro.com



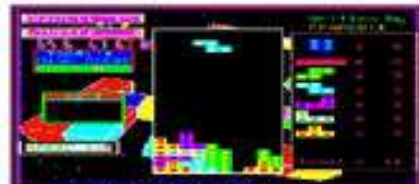
Vroom by Pyramide



E.V.A. by Westway



Mortville Manor by Pyramide



Double Block by Francois Lanleut



Night Nurse by Microdeal

So, by processing the tokenised BASIC programs in this way, a plain text version of the original listing can be produced. It then becomes easy to load the listing into a plain text editor such as QD or S_Edit and amend them by hand to run on the QL, using David's conversion notes. Both the conversion notes and de-tokeniser packages are available to download from the BASIC programs page on my website:

<http://www.dilwyn.me.uk/basic/index.html>

K R U Z & Q U E R

I've added a copy of this pointer driven game to my website. The name translates as 'Cross & Diagonal'. It needs instructions, however, as I have been unable to figure out how it works – can anyone help? Download it from my website's Games page at:

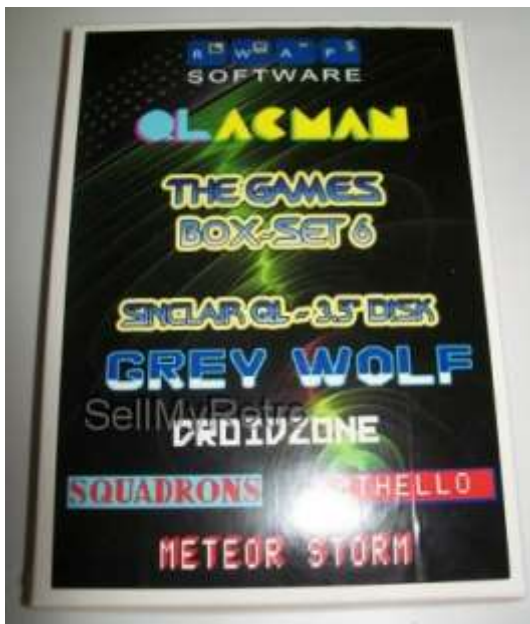
<http://www.dilwyn.me.uk/games/index.html>

M I S T U P D A T E

Those who have been interested in the MIST FPGA board with QL emulation will be pleased to learn that some enthusiasts on QL Forum have hacked the core a little to allow the maximum usable RAM to be increased from the original QL value of 640K up to 896K like a Trump Card. Paul Veltjens described how he achieved this in a post on 14th May under 'QL on MIST FPGA board' in the Hardware section. Paul kindly made the amended core available as a download from:

<http://www.qlforum.co.uk/viewtopic.php?f=2&t=1360&p=13134&hilit=896k#p13134>

QL GAMES BOX SET 6



(Picture from SellMyRetro.com)

RWAP Software have now released the QL Games Box-Set 6, which includes the following games:

DROIDZONE
GREY WOLF
METEOR STORM
OTHELLO
QLACMAN
SQUADRONS

Most of these games have been hard to find in the past and are well worth a look. Cost is £20 for all 6 games and they are available through SellMyRetro.com:

<http://www.sellmyretro.com/offer/details/sinclair-ql-box-set--ql-games-6-16121>

Professor Timo Salmi was a prolific author in the early days of the QL. Based at the university of Uvasa in Finland, he released a number of QL programs mainly written in SuperBASIC and also contributed a lot of software to the Quanta Library, including a number of games, mathematical and general utilities. Have a look at the online Library Guide at:

<http://quanta.org.uk/software-library/quanta-library-guide-online-version/>

Up until fairly recently, Prof. Salmi's work was still available from the University's Garbo servers, until there was a major breakdown and the files were lost. Rich Mellor reports that some of Prof. Salmi's work can be downloaded from:

<http://en.nitroroms.com/search/All/salmi/page-1>

These have been added to the BASIC Programs page on my website for posterity (tsbasprog is a collection of 34 programs, while tsbasrout is a collection of 14 procedures and functions) at:

<http://www.dilwyn.me.uk/basic/index.html>

Also, Petri Pellinen in Finland reports that there's a fairly recent copy of the QL things of garbo.uvasa.fi on the Internet Archive if you switch to http protocol instead of ftp in the url:

<https://web.archive.org/web/20120305110342/http://garbo.uvasa.fi/ql/>

The snapshot is incomplete in that some of the download links do not work, but most of what is available is already on my site – the SuperBASIC programs and Pascal examples, in particular.

L I N U S T O R V A L D S I N T E R V I E W



Screen Shot of his website

Urs König reports that the page holding the video of the interview between Linus Torvalds and Jeremy Allison (where he talks about his QL programming days) along with the listing of the GMOVE blitter code Linus wrote for QL, has been restored – see the page at http://www.sinclairql.net/Linus_Torvalds_QL_stuff.html

I D I S

We have secured permission from the author to release the IDIS intelligent disassembler, a formerly commercial software offering. The version released is the IDIS SE or Special Edition.

Permission was also given to release the IDIS sources if these can be found.

Download IDIS SE from <http://www.dilwyn.me.uk/asm/index.html>



e start the new QUANTA year with no changes to the Committee. Once again we held an electronic AGM, where we had 10 members present with 2 on the phone and 3 proxy votes. As all the reports had been sent to members the only updates were presented by the Treasurer, both on the accounts and regarding the number of members that have renewed.

Currently John Gilpin and John Southern are working on their series of articles of games in SuperBASIC. The 2048 game which was played at the QL is 30 meeting has been improved. The pointer environment has been fully explained and (with permission from Norman Dunbar) some of the errors have been corrected. Thank you to both the Johns and Norman.

Thank you to Dilwyn Jones for all his hard work during a protracted period of family difficulties. Thank you to Keith Dunbar for his work on the web site, despite some difficulties with our supplier. Thank you to Lee Privett for his excellent work on producing the magazine so promptly and with such good content. Thank you to Alison Southern for her work as our secretary.

The mini workshops held in February and April were a success, as those that attended were able to work on numerous projects. The next workshop will be held on Sunday, June 26th at 181, Urmston Lane from 1.00pm to 7.00pm. These workshops are open to members, non-members and friends.

JOCHEN MERZ SOFTWARE

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Thanks to Marcel, QPC2 is now freely available.
You can download it from Marcells homepage

www.Kilgus.net

If you wish to print from QPC2, then you need

QPCPrint

... which is available from J-M-S.

Only 39.90 if you choose EMail delivery.

For additional 4 EUR, delivery will be on CD.

QPCPrint will allow you to print to (more or less) every printer which is installed under Windows (dot matrix, ink, laser, PDF "printer", FAX "printer" etc.)

You can place your order via letter or use the SSL order form on SMSQ.J-M-S.COM - click on "Online orders".

If you order by Mail or through the SSL contact form: We now accept VISA, MasterCard, Diners Club, JCB, Discover, UnionPay, BCard, DinaCard and American Express!

The order form has not been updated for the new card types at the time I write this ad, but it will be updated soon.

I am still working on changing the forms and implementing SEPA on all the order forms.

Rich Mellor now has all the items donated by John Mason's family. Our thanks to Rich for the work he has done for QUANTA over the years selling spare parts etc. on QUANTA's behalf.

RESIZING WINDOWS

GEORGE GWILT



It is common for a Pointer Environment program to contain the facility to resize its window. There is a standard, though not entirely straightforward, procedure for this involving the vector `WM_CHWIN` which conveniently returns to the programmer the distance moved by the pointer as an indication of the change of size required.

However, I recently wanted to be able to change a window's size on information gleaned from a file loaded by a user. The purpose of this was to be able to display contents of the file in a sub-window. The gleaned information would give me the size of sub-window needed for the display. From that information I wanted to resize the window appropriately.

How could I find the required window size? And what is the code to do the change?

Let's take a particular example. A window definition has, first, a fixed part, which contains the maximum size of window. This is followed by one or more repeated sections, each with a size smaller than that in the previous section. In this case let's assume that there is only one of these sections.

This section, then, contains the minimum size of window. To indicate that the window may be resized, or scaled as the manual has it, its size has a scaling factor of \$4000 added to it.

This applies to one or both of x and y. When a window is marked as resizable any sub-windows must have scaling factors added to the top nibble of the definitions of their size and origin. The scaling factor must be one of the four values 0 to 4 with the following meanings:

Value (v)	Meaning
0	No change
1	1:4 scaling
2	1:2 scaling
3	3:4 scaling
4	Total scaling

The implication of these is that if, say, $4*k$ is added to the width of a window $v*k$ is added to a scaled item, which, of course, is either the size or origin of a sub-window.

Let's narrow the example still further. Let's have only one application sub-window.

The problem is to write a subroutine which, given the x and y required sizes of the application window, will resize the main window. The steps are:

1. Find the increases needed in the sub-window.

The increases are the differences between the required sizes and the minimum sizes given in the window definition.

2. Using the scaling in the sub-window, find the corresponding increases in the main window.

For a scaling factor of (a non-zero) v the window increase is $4/v$ times the sub-window's increase.

3. Hence find the required window size.

The size is the minimum size given in the window definition plus the increase found in 2.

4. Using this information resize the window.

A window definition is made up of several sections. First is a fixed section which contains the maximum size of the window. This is followed by one or more repeated sections pointing to particulars of loose items and sub-windows. All pointers in the window definition are word relative.

This means that the address of an item is the value of the pointer plus the address containing the pointer. If an item is more than a word away the word pointer has one set in its least significant bit. In that case the word relative pointer, with the indicating bit removed, points to a long word which, itself, is the address of the item.

Two subroutines used by the resizing code are given here.

The first is "do_wd" which finds the subject of a pointer.

The second is "do_inc" which finds the x and y increases needed to produce the desired sub-window.

```
; On entry (A2) contains the pointer to the item.
; On an error free exit A2 contains the address of the
item.
; On exit D0 contains -1 if there is no pointer,
otherwise 0.
```

```
do_wd      move.w      (a2),d0      offset
           beq        do_wd2      no pointer
           bclr       #0,d0        make even
           adda.w     d0,a2        -> item/address
           beq        do_wd1      it was item
           movea.l    (a2),a2      to item
do_wd1     moveq      #0,d0        mark "no error"
           rts
do_wd2     moveq      #-1,d0       mark "error"
           rts
```

```
; At entry:
; D1 contains the desired size of the
; sub-window (either x|y or y|x)
; D3 = 12
; A2 -> x then y size of sub-window
```

```
; On exit:
; D0.W contains the x or y increase or -1
; D1 is swapped from x|y to y|x or vice versa
; If there is an error an exit is made from
; "resze" and D0 is set to -1
```

```

do_inc    move.w    (a2)+,d5    x-size/y-size
          move.w    d5,d4
          lsr.w     d3,d4      scaling
          beq      do_incl    No scaling!!
          move.w    d5,d2
          andi.w    #$fff,d2   clear scaling
          moveq     #0,d0      D0.L cleared
          swap      d1
          move.w    d1,d0      x-value/y-value
          sub.w     d2,d0      increase needed
          bmi      do_incl    value too small
          lsl.l     #2,d0      x4
          addq.l    #3,d0      round up
          divs.w    d4,d0      x/y increase
          rts

```

```

do_incl   lea      4(sp),sp    delete return add
          moveq     #-1,d0      mark error
          rts                exit from resze

```

There are two further subroutines used by "resze". They are "getsp" and "rechp". These repectively claim and release space from the heap. They form part of EasyPEasy.

Three items in dataspace are assumed set up. They are:

```

    osz(a6)                to hold the previous size

```

incx(a6)	the x increase
incy(a6)	the y increase

The subroutine "resze" is now given here

; On entry:

; D1.L contains the required size of the

; sub-window

; On exit:

; Either a window appears on the screen and

; D0 = 0, or there is an error, no window and

; D0 = -1

```

resze      movea.l    ww_wdef(a4),a5    win def
           move.l    wd_rbase+wd_xmin(a5),d7
           bclr     #30,d7      clear x-scaling
           beq      rz2        OOPS - not there
           bclr     #14,d7      clear y-scaling
           beq      rz2        OOPS - not there
           move.l   wd_xsize(a5),d6    max size
           lea     wd_rbase+wd_pappl(a5),a2

           bsr     do_wd        -> app sub-window
           bne     rz2        no sub-windows!

rz1        bsr     do_wd        A2 -> app
           bne     rz2        no sub-window!

```

```
; Find the x- and y- increases in the window
; which will result in the correct sizes in the
; sub-window on resizing.
```

```
    moveq    #12,d3
    bsr     do_inc
    move.w   d0,incx(a6)
    bsr     do_inc
    move.w   d0,incy(a6)

    move.l   d7,d1
    add.l    incx(a6),d1    size needed

    cmp.l    d6,d1
    bgt     rz2            y-size too big
    cmp.w    d6,d1
    bgt     rz2            x-size too big
```

```
; We now find "optr" - the original pointer
; position. This is the window's origin on the
; screen plus the original position of the
; pointer inside the window plus the size of
; the window. This is needed for wm_prpos below
```

```
    move.l   ww_xorg(a4),d7
    add.l    wd_xorg(a5),d7
    add.l    ww_xsize(a4),d7
```

```
; D7 now contains "optr"
```

; The new x-size must not be smaller than the
; window's minimum or larger than its maximum.

```
        move.w    wd_rbase+wd_xmin(a5),d5
        bclr     #14,d5      minimum x-size
        swap     d1
        move.w    d1,d4      new x-size
        cmp.w     d5,d4      OK? . .
        bgt.s    resze1     . . yes
        move.w    d5,d4      set minimum
resze1  move.w    wd_xsize(a5),d5  max x-size
        cmp.w     d5,d4      OK? . .
        blt.s    resze2     . . yes
        move.w    d5,d4      set maximum
```

; Now set x-size a multiple of 4

```
resze2  moveq     #3,d3
        add.w     d4,d3
        andi.w    #$fffc,d3
```

; The new y-size must not be smaller than the
; window's minimum or larger than its maximum.

```
        move.w    wd_rbase+wd_ymin(a5),d5
        bclr     #14,d5      minimum y-size
        swap     d1
        move.w    d1,d4      new y-size
```

```

        cmp.w      d5,d4      OK? . .
        bgt.s     resze3     . . yes
        move.w    d5,d4      set minimum
resze3  move.w     wd_ysize(a5),d5  max y-size
        cmp.w     d5,d4      OK? . .
        blt.s     resze4     . . yes
        move.w    d5,d4      set maximum
resze4  swap      d3
        move.w    d4,d3      D3 = new size

```

```

; D3 now contains the new size "ns"
; Here we check that the new size differs from
; the old. If so we set up a new working
; definition having abandoned the old one.

```

```

        move.l    osz(a6),d2  old size to D2
        move.l    d3,osz(a6)  update old size
        cmp.l     d2,d3      change? . .
        beq      resze7     . . no - exit
        movea.l   wmvec(a6),a2  replace WMVEC
        jsr      wm_unset(a2)
        bsr      rechp
        move.l    d3,d1      new size
        jsr      wm_fsize(a2)
        move.l    d1,-(a7)    keep size
        move.l    #ww0_0,d1   space needed
        bsr      getsp
        move.l    (a7)+,d1    replace size

```

SMALL ADS

STILL FOR-SALE

And other areas around Manchester, the home of the publishers of QUANTA (MUST BE SEEN), three available items - Comments, Programming, Reviews. Offers in excess of 100 words to the Editor will be accepted

DOG FOUND!

Well nearly, do you find yourself dogged down by the mundane, then give yourself a rest and write something in about anything, go on give the editor a headache by having too many articles to choose from. Especially software based. For the rest of you reading this, if you have a QL based project that you think others would benefit from then please contact the Editor on how this is possible, go on, you know it makes sense.

WANTED

With **FTC** (Fleet Tactical Command) having been found, I'm now trying to track down **FTC II** by **Diren** which is currently missing in action. I'm also after **Top Team** by **Arunsoft** which was a football management game. If you can help please contact Peter at:

peetvanpeebles@yahoo.co.uk

###-SPACE-###

The final frontier, these are the continuing requests for people to write in and publish something for the QL

WORK FROM HOME

Do you have any spare time, even just 1 hour every six months or so (yes six months, we have increased our expectations to six months), and you haven't written in yet? Shame on you. Earn yourself lots of gratitude with a certificate of thanks, normally sent by email, by contributing something to the magazine. We can't pay you £££s or ££s or even £ but what you will be doing will be rewarding in itself and you get your name in typeset style lights (without the lights bit). **Interested?**, then contact the editor of the magazine via the contact page inside the front cover. **Not interested?**, then contact the editor of the magazine via the contact page inside the front cover. We will be glad to hear from you.

Chickens Needed

Loads of chickens are needed to provide eggs for breakfast and other foodstuffs. If you keep chickens like I do, then you know the benefits of this as well as the pitfalls, however, **DON'T EAT THEM** (chickens that is). For all you other chickens, why not write or submit that SuperBASIC listing for the magazine. **Short** Listings - any number of lines really, from just a few to a couple of pages, single or multiple procedures and functions. As long as you have written to either solve or explore a programming problem. Or even just for a bit of experimental fun. **Long** listings? No program is too big, no language too strange, whether its just concepts, SuperBASIC, block diagrams, Boolean logic, assembler, mnemonics (that's one for you George), C# C++ C- - or just plain C, Pascal, Fortran or even S*BASIC, anything about everything would be appreciated. What if you don't know if your program listing is too long to be short or too short to be long? **NO WORRIES**, we accept medium listings too, all throughout the year. So get writing now and

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Contact us in the usual way, so contact us **NOW!**

If you would like to place a small ad then go to page 2 for full details of how to go about it, options are for QUANTA members as well as non-QUANTA members. Also...QUANTA readers! please note that if you don't tell us what you want, we don't know, we are not mind-readers. Help us improve the magazine by having your say, making your point and eating that curry.


```

        movea.l   a0,a4          new working def
        movea.l   id(a6),a0      replace ID
        jsr       wm_setup(a2)

;
; The position for PRPOS is oprt-ns with
; minimum of 4 | 2
;

        move.l    d7,d1
        swap      d1
        swap      d3
        sub.w     d3,d1
        cmpi.w    #4,d1         OK? . .
        bge.s     resze5       . . yes
        move.w    #4,d1         set 4
resze5   swap      d1
        swap      d3
        sub.w     d3,d1
        cmpi.w    #2,d1         OK? . .
        bge.s     resze6       . . yes
        move.w    #2,d1         set 2
resze6   jsr      wm_prpos(a2)
        jsr      wm_wdraw(a2)
resze7   moveq    #0,d0         mark "no error"
        rts
rz2     moveq    #-1,d0
        rts

```

T

o those of you who are still following our article on “Gaming in

SuperBASIC”, I hope that you have taken full opportunity of the past two months to familiarise yourselves with the Pointer Environment (PE) and in particular EasyPointer4 (the latest version is now fully updated and free for those who wish to use it). During the last couple of weeks, I have been told by someone in our Sub-Group who still has a Black Box QL that anyone who **only** has a Black Box QL will not be able to follow this article any further without obtaining some free software (I am prepared to supply the Software on a CD ROM or maybe I can put it on the QUANTA Web Site for you to download.) Let’s call it “The Q2048L Software Bundle”.

You are also going to need either a PC computer or a laptop. (You will not need a vastly expensive model, just a basic computer will do and it should be running MS Windows XP (or later) as its operating system. Some newer PCs and laptops no longer come with a floppy disk drive, hence the reason for providing all the software on a CD ROM which I will split up into various folders to help you to identify the contents. I will include a copy of the latest available versions of:-

- “EasyPointer4”
- A self-unzipping version of “UNZIP”
- A copy of the latest QPC2 – V4.0.4.9 (or later version)
- And plenty of other goodies!!

together with instructions on how to use them and the sequence in which things should be used.

Now then, let's get on with what we intend to do. I believe in a broad outline plan. The sub-Group agreed that we would work on a series of games as well as other useful items of software - so we are likely to need a small menu to select the type of software you (or others) intend to run. At the moment, we only have "Games" on our menu but it will be simple to add other items as we go along. "Games" implies an amount of competition so we will develop a way of scoring for our games and a list of names relating to the people who wish to "have a go". We could include a "High Score" for each game (so that we can see who does best at each game and an overall "High Score" where all the high scores are added together to show who is the current "Overall Games Champion".

As we develop our games, we will need another menu in order to select which game is to be played and again we will make it simple to add extra games as we go along, as well as providing access to other facilities (like EasyMenu and EasySprite – both parts of the EasyPointer4 overall program) - easily!

I have used a memory stick to hold everything including a QPC.win file (a large file which behaves rather like a simple hard drive within QPC2, more about this later). You can choose what you want to do about this when the time comes.

Just a word of warning, what you will have on your PC or Laptop (I am from here on in, only going to use the letters PC to include your PC or Laptop) are two completely different environments, a DOS environment and a QL environment. You must be very careful about storing certain files intended for your QL in the usual DOS folders on your PC.

If you accidentally do this, you may damage the files and they may not run – to cover this I will include a way of making a backup copy of the software that you will never need to put anywhere near a DOS folder on your PC. The original CD ROM is safe in either environment. What I intend to do is to give you a “SUPER QL” housed on your PC.

I think that we should get that up and running first:-

On the CD that I have provided you with (or you may have downloaded for yourself), you will find a folder called “QPC2 V4.0.4.9 which contains the following files:- license.txt, QPC Manual.pdf, QPC2 setup 4.0.4.9.exe, smsqe.bin, unins000.dat, and unins000.exe.

A short note here to let you know what the files are and what I think they do:-

License.txt, as the name implies, is a text file which can safely be opened in say Notepad or Wordpad on the PC and it contains the agreement by which you are entitled to use the QPC2 software. It isn't intended to frighten you in any way and is similar in content to the license agreement found in many other software bundles.

QPC Manual.pdf. This is the instruction manual for using QPC2 and should be read carefully then retained for later referral to its contents.

QPC2 setup 4.0.4.9.exe. This is the executable file which will install QPC2 V4.0.4.9 on your PC.

Smsq.bin is the binary file containing the configuration data

when you save it. There may be other data in this file but I don't know what and I've never had need to know either!

Unins000.dat and .exe are for using to uninstall the QPC2 program from your PC should you wish to do so. Personally, I have had my copy of QPC2 (of varying versions) installed on my PCs and laptops ever since they were new. It is my convenient way of using "MY QL" without having to find the Black Box, its power supply, connecting leads and a monitor to be able to see what I am doing!! That was OK some 30 years ago but times continue to change and although it is nice to be able to tinker with the QL, this is a much simpler way of doing it.

WOW, A SUPER QL, almost free of charge!

If you have had any experience at all with installing Software on your PC, you should have NO trouble installing QPC2. Simply open the CD and in the folder called QPC2 V4.0.4.9 find the QPC2 setup 4.0.4.9.exe file and double click on it.

The installation program should start and all you have to do is wait a few seconds (following the screen instructions, if any). It will even put a short-cut icon on your desktop in order that you can easily start the program. Information regarding configuring the program should be read again so that you will know what you are doing when the time comes.

The next step is to create your QPC.win file. If you can find a large (ish) DOS file – say somewhere between 1KB and 1MB, take a copy of it in the DOS environment – that is on your PC, so as not to damage the original file – and follow the instructions in the QPC2 manual. The copy of the Manual that I have (revision 1.03) has a number of sections and you will generally need the section

“SMSQ/E for QPC”, included on your CD (a shortened version of the full Manual.) Blow-by-blow: I took an old MS Excel file of about 1KB in size, copied it to a folder on my hard drive which I named “MOVE TO QL”. I then went into that folder and renamed the .xls file to “GAMES10_win” so I now have a 1KB file called GAMES10_win in a folder named MOVE to QL This means that the original .xls file is still where it was and has its original file name. Then double click on the QPC2 icon on your desk top.

If you get the configuration page, then all is well. If you don't, close the screen that looks like a copy of the standard QL screen with the usual 3 red and black windows (As usual, you close it just as you would any other program on the PC – click on the red 'X' at the top right hand corner of the screen). Double click on the QPC2 Shortcut icon on your desktop but this time, hold down the “SHIFT” key while doing it.

This time, you should get the configuration page of QPC2. On the CD ROM I sent you, you will find a couple of screen shots which are worth printing out if you have a printer attached to your PC. If not just open the two .jpeg files named “CONFIG 1.jpeg” and “CONFIG 2.jpg”.

The first one of these pictures shows the Configuration Set up on my machine. When you have got yours looking the same, click on the Devices button at the bottom left hand corner and adjust your screen details to look like mine. The most important item at this stage is DOS1. Click on the browse button for DOS1_ and select where your Games10_win file is in the “MOVE TO QL” folder you made. Mine reads “Z:\QL\MOVE TO QL” which means that it is on my Z Drive in the QL folder.

Once you have set the DOS1 link, you will be able to get at the

“MOVE TO QL” Folder from within QPC. Click on OK on the devices page which returns you to the first Configuration page. On this page, click on the SAVE Button and then OK which will return you to the QL looking screen with the Black and Red Windows.

Following the instructions on page 9 of the SMSQ/E Manual, type:-

WIN_FORMAT 1 then press <ENTER> This opens WIN1_ for formatting. Then type:- **FORMAT WIN1_10** then press <ENTER>

This creates a 10 Megabyte WIN device. At this point you should find a two character phrase in the window#0 area. Type these two characters and press <ENTER>. This confirms that you wish to format the WIN device. Finally type:- **WIN_FORMAT 1,0 <ENTER>**

This protects your WIN device against accidental and unwanted formatting again. Now you need to decide where to store your win device.

Using a big(ish) Memory stick, I keep my entire Sub-Group Games project on there. This way, I can plug it into any PC which can run QPC2, but you can choose your own destination. If you have a Data drive on your PC (as well as the “C” operating system Drive, you could make a folder on there or if all else fails you could use the “C” drive itself.

Make a folder on whatever Drive you decide to use – I called My Memory Stick the “Games” drive so you could call your folder something similar, like “**QL_GAMES**”. Now then, the win Device that you formatted a short while ago is still in the Move to QL folder. Move it from there into your “**QL_Games**” Folder on your **WIN1_DRIVE** and if it isn’t already called **GAMES10_WIN** then rename it say “**GAMES10_WIN**” indicating that it is a win device of

10 Megabytes and is being used for the Games Project.

Now you can go back to the QPC2 Configuration page and browse for WIN1_ on the devices page (Photo 2) and set WIN1_ to look at your “**GAMES10_WIN**” device – should be on your “C” or “D” drives wherever you chose to put it.

Once you have got your **GAMES10_WIN** available to the QL, you should be able to use the usual QL Keywords like “DIR, WCOPY etc. If you type **DIR WIN1_** and <ENTER> you should see an empty drive with the drive statistics the only thing to be printed on the screen. The statistics that I get with a blank WIN device of 10 MB is:- 20452/20480 sectors, which as you are probably aware means that there are 20452 sectors free out of a total of 20480 sectors. (which equals 10MB). We can now look at the similarities

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and differences between your PC Hard Drive and the GAMES10_WIN device on your QL.

Generally, they are very similar to each other, in that you can store files on them and you can split them up using Folders. What is different is the way that we make those folders. On your PC you just click on “New Folder” then rename the folder, whereas on the QL you use the keyword **MAKE_DIR**, so suppose we want to make a folder called “GAMES” The command becomes “**MAKE_DIR WIN1_GAMES_**” and **<ENTER>**.

Then, if you type **DIR WIN1_** you will see that under the drive stats there is an entry that looks like this:- “**GAMES →**”. The Wording tells you that you have a folder called “GAMES” which we wanted and the arrow indicates that this is a folder. If you want a folder within the games folder you type:-

MAKE_DIR WIN1_GAMES_Q2048L_

DIR WIN1_ again and your new folder is not showing but if you type:- “**DIR WIN1_GAMES_**” you will see the wording **GAMES_Q2048L→** showing that you now have a folder called “**Q2048L**” inside the folder “**GAMES**”. This all indicates that you must type the whole path starting with the drive (**WIN1_**) then “**GAMES_**” then “**Q2048L_**” without any spaces except after the command (**DIR** etc.) so to see what is in the folder “**Q2048L**” you type:- **DIR WIN1_GAMES_Q2048L_** and **<ENTER>**. So far there is nothing in this folder so all you will see is:- The drive statistics 20444/20480 showing that the folders have used some of the memory out of the total 20480 (10MB) If you want a second folder at the same level as “GAMES” you merely type **MAKE_DIR WIN1_PROGS_** a folder to hold any Programs that you may need later. Now, a **DIR WIN1_** will show:-

20440/20480 sectors

GAMES →

PROGS →

The two folders that we wanted.

I'll bet that you are now ready to move forward with our games program. We start with a boot program in the usual way, and in order that your program will start automatically when you start up your SUPER QL. You will notice at the bottom of the second QPC2 config page, there is a section called "boot options".

This is to give a list of where your SUPER QL should look for the BOOT file, firstly on flp1_ which is a floppy disk drive and if you don't have one, it needs to look elsewhere hence the second window in which you want to select WIN1_. Thus when you start up, your SUPER QL will first look for a floppy drive (flp1_) and not finding one, it will look on the WIN1_ device. So, our BOOT program looks something like this:-

```
1000 REMark QL General BOOT V1.00 08/09/2014
1010 IF MACHINE = 30 THEN QPC_MAXIMIZE : ELSE
TK2_EXT : END IF
1020 Clearscreen
1030 AT#2,4,26:PRINT#2,"Please Select from the menu
below"
1040 AT#2,8,36:PRINT#2, "'G' for GAMES"
1050 AT#2,18,28:PRINT#2,"'ESC' to Return to
SuperBASIC"
1060 REPEAT MenuLoop
1070 y=CODE(INKEY$(-1))
```

```

1080 SELEct ON y
1090 = 27:Clearscreen:EXIT MenuLoop: REMark ESC Key
Pressed
1100 = 71,103:Clearscreen:LRUN WIN1_GAMES_BOOT: EXIT
MenuLoop: REMark G or g key pressed
1110 = REMAINDER : NEXT MenuLoop: REMark Any key other
than ESC G or g pressed
1120 END SELEct
1130 END REPEat MenuLoop
1140 REMark End of General Boot
1150 :
1160 :
2000 DEFine PROCedure Clearscreen
2010 REMark V1.00 19/06/2014
2020 OPEN#1,con_512X205a0X0
2030 OPEN#2,con_512X205a0X0
2040 OPEN#0,con_512X52a0X204
2050 PAPER#1,0:INK#1,7:CSIZE#1,0,0:CLS#1
2060 PAPER#2,0:INK#2,7:CSIZE#2,0,0:CLS#2
2070 PAPER#0,0:INK#0,7:CSIZE#0,0,0:CLS#0
2080 END DEFine Clearscreen
2090 :
2100 :

```

Just a few notes to explain what is going on:-

Line 1010: after a line giving the title of the program, we need to find out what sort of QL you have got. The Keyword MACHINE is a QPC2 KEYWORD and it returns the QL type. QPC2 will return 30 .

So we are saying that IF we have QPC2 then we want to maximise the screen size to full screen.

Line 1020: calls the procedure “Clearscreen” which not only clears all the windows but resizes them all so that we always start with a consistent screen (size and position)- See lines 2000 to 2100 for the PROCEDURE. Then we print something to the screen saying “Please Select from the menu below”. Now we add the menu which as I said earlier only has one item in it:- GAMES. Having said that, if you wanted to break into your boot program for any reason you can select the ESC key on your keyboard and you will be returned to a blank QL Screen.

I am using a REPEAT command here so that any key press will have its ASCII code put into the numeric variable ‘y’. This is then followed by a SELECT ON call to examine the contents of the variable ‘y’. ASCII Code 27 is that for ESC and if this has been pressed we call the “Clearscreen” PROCEDURE before jumping out of the REPEAT loop, which is the end of the program and we return to our blank screen with keyboard access for whatever we need to do.

On the other hand if the Key “G” is pressed (ASCII code 71 or 103 – depending whether you press a capital G or a lower case one) we call the “Clearscreen” PROCEDURE (See how useful it is?) then immediately load our second boot to select which game or application you want to use. We also jump out of the REPEAT loop (called MenuLoop) thus leaving the first boot tidily ready for loading the second boot.

Line 1110: IF any other key is pressed, nothing happens except that we start from the top of the REPEAT loop again and wait for a valid key (either G, g or ESC) and that’s about it for this stage.

Look out for article 4 in the August Issue of QUANTA Magazine.
Happy SUPER QLing.

AN INTRO TO IPBASIC

MARTIN HEAD

IPBasic is a collection of machine code Procedures and Functions for SuperBASIC, that allow it to use the IP device drivers that are built into UQLX, QPC2, and Qemulator.

It can be downloaded from the QL Forum web site :

<http://qlforum.co.uk/download/file.php?id=868>

In this article, I am going to show how to create two simple Client/Server chat programs in SBASIC that allows two PC's running QPC2, to 'talk' to each other over a UDP and a TCP network connection.

UDP connections are supposed to be easier to implement than TCP connections. But in QPC2 I have had nothing but problems trying to use UDP connections, So I am going to deal with a TCP connection first.

For the purpose of this article, we will have two computers running QPC2, and connected together on a network. The computer that we will use as the Server has an IP address of 172.16.0.6 and the computer that we will use as the Client has an IP address of 172.16.0.4. See notes at the end for use on Qemulator and UQLX.

TCP Chat program

We need to create two SBASIC programs, one to be the Client, and the other to be the Server.

Install the IPBasic programs with a LRESPR device `_IPBasic_cde`. You should get a message in #0 telling you that the program has been installed.

I will start with the Server program.

The first things we are going to do is open a console to do the chatting in, and a TCP channel to accept connection requests.

```
100 REMark IPBasic TCP Server chat program
110 OPEN#5,con_
120 CLS#5
130 OPEN#6,"TCP_"
```

Next we have to assign an IP address and a port to this TCP channel with an `IP_BIND` command. The IP address, is the IP address that is assigned to the network interface of the computer that is going to be the Server, You could also use '0.0.0.0' here, as it would allow the Server to use any assigned network interface in the computer.

The port is one of the 65536 available ports on the computer. Many ports have pre-defined uses, or are used by the computers operating system. For example your web browser uses port 80 for http web pages.

```
140 IP_BIND#6,5800,"172.16.0.6"
```

Note – The `OPEN` and `IP_BIND` commands could have been replaced with

```
OPEN_NEW#6,"tcp_172.16.0.6:5800"
```

Next we need the `IP_LISTEN` command to set the number of

connection requests that will be queued for the upcoming IP_ACCEPT command.

```
150 IP_LISTEN#6
```

This will set the number to requests to queue, to the default of 5. The server is now ready to start waiting for a connection request from a client

```
180 REPEAT loop1
190   ch=IP_ACCEPT(#6)
200   IF ch>0 THEN EXIT loop1
210   IF ch<>-1 THEN
220     PRINT#5,"An Error occured during
IP_ACCEPT."
230     CLOSE#6
240     PAUSE-1
250     CLOSE#5
260     STOP
270   END IF
280 END REPEAT loop1
```

What is happening here is that the IP_ACCEPT function will look to see if another computer is trying to make a connection to the Servers IP address and port.

If there is another computer trying to make a connection, then IP_ACCEPT will accept the connection and create a new SBASIC channel that we will use from now on for communication. Note channel #6 is still open and could be used with IP_ACCEPT again, to accept more connection requests. So the Server program could handle multiple clients at the same time. But I won't go into that here. If there is no one trying to make a connection, then

IP_ACCEPT will return -1, the QDOS error 'Not Complete'. And then go around the loop again. Any other error stopping the program.

After a connection has been made, we will now run a loop receiving a message from the Client, Inputting a reply, and sending it back. And just typing 'quit' to stop.

```
360 PRINT#5
370 REPEAT loop2
380 INPUT#ch,a$
390 IF a$=="QUIT" THEN EXIT loop2
400 INK#5,7
410 PRINT#5,a$
420 INK#5,4
430 INPUT#5,b$
440 PRINT#ch,b$
450 IF b$=="QUIT" THEN EXIT loop2
460 END REPEAT loop2
```

Finally we will close the used channels.

```
470 CLOSE#ch
480 CLOSE#6
490 PRINT#5\\\\"press any key to end"
500 PAUSE -1
510 CLOSE#5
```

Now for the Client program. It starts the same by opening a TCP channel.

```
100 REMARK IPBasic TCP Client chat program
```



```
110 OPEN#5,con_  
120 CLS#5  
130 OPEN#6,"TCP_"
```

This time we use the IP_CONNECT command to connect to the Server computer.

```
150 IP_CONNECT#6,5800,"172.16.0.6"
```

This tells the Client computer to connect to port '5800' on the computer with the IP address "172.16.0.6" (the Server). The IP_CONNECT command will automatically assign a free port on the Client computer to use for this connection.

As with the Server, the OPEN and IP_CONNECT commands may be replaced by one open command. Only this time by

```
OPEN_IN#6,"tcp_172.16.0.6:5800"
```

If the Server is not trying to accept a connection. IP_CONNECT will return with a QDOS 'Transmission error'.

We now run a similar loop, Inputting a message to send to the Server, Then receiving a reply. As before, just type 'quit' to stop.

```
200 PRINT#5  
210 REPEAT loop  
220 INPUT#5,a$  
230 PRINT#6,a$  
240 IF a$=="QUIT" THEN EXIT loop
```

```
250 INPUT#6,b$
260 INK#5,7
270 PRINT#5,b$
280 INK#5,4
290 IF b$=="QUIT" THEN EXIT loop
300 END REPEAT loop
```

And finally we will close the used channels.

```
310 CLOSE#6
320 PRINT#5\\\\"Press any key to end"
330 PAUSE-1
340 CLOSE#5
```

Run the Server program first, on the server computer, then the Client program on the client computer. You can then type a message on the Client, press Enter, and it will appear on the Server. At which point you can type a reply on the Server, and it will appear on the Client. Now we have that working, lets add a couple of extra features –

First we will use the IP_GETHOSTNAME\$ function to get the name of the computer the program is running on. This may be something like 'Dell-Laptop'. Just after the connection has been made, the two programs will exchange names.

On the Server.

```
160 PRINT#5,IP_GETHOSTNAME$;" - Waiting for a
connection..."
170 PRINT#5
```

On the Client.

```
140 PRINT#5,IP_GETHOSTNAME$;" - Making a  
connection... ";
```

On the Server

Next the Server will exchange it's name with the Client, and then use the IP_GETPEERNAME\$ function to find the IP address, and port number of the Client computer.

```
290 INPUT#ch,client$  
300 PRINT#5,"Connection made from ";client$  
310 PRINT#ch,IP_GETHOSTNAME$  
320 sa$=IP_GETPEERNAME$(#ch)  
330 port=SA_PORT(sa$)  
340 ip$=IP_INET_NTOA$(SA_IPADDR(sa$))  
350 PRINT#5,"Using IP Address ";ip$;" on Port  
";port
```

IP_GETPEERNAME\$ returns a socket address structure string. This is data structure which holds IP address and port information. We use the SA_PORT and SA_IPADDR functions to extract the required information from the socket address string. SA_IPADDR returns the IP address as a floating point number rather than in the dots-and-numbers format, So we use the IP_INET_NTOA\$ function to convert it into a dots-and-numbers form

On the Client

Swap names.

```
160 PRINT#5,"Connected to ";
170 PRINT#6,IP_GETHOSTNAME$
180 INPUT#6,server$
190 PRINT#5,server$
```

The two complete programs.

The Server

```
100 REMark IPBasic TCP Server chat program
110 OPEN#5,con_
120 CLS#5
130 OPEN#6,"TCP_"
140 IP_BIND#6,5800,"172.16.0.6"
150 IP_LISTEN#6
160 PRINT#5,IP_GETHOSTNAME$;" - Waiting for a
connection..."
170 PRINT#5
180 REPEAT loop1
190 ch=IP_ACCEPT(#6)
200 IF ch>0 THEN EXIT loop1
210 IF ch<>-1 THEN
220 PRINT#5,"An Error occured during IP_ACCEPT."
230 CLOSE#6
240 PAUSE-1
250 CLOSE#5
260 STOP
```

```
270 END IF
280 END REPEAT loop1
290 INPUT#ch,client$
300 PRINT#5,"Connection made from ";client$
310 PRINT#ch,IP_GETHOSTNAME$
320 sa$=IP_GETPEERNAME$(#ch)
330 port=SA_PORT(sa$)
340 ip$=IP_INET_NTOA$(SA_IPADDR(sa$))
350 PRINT#5,"Using IP Address ";ip$;" on Port ";port
360 PRINT#5
370 REPEAT loop2
380 INPUT#ch,a$
390 IF a$=="QUIT" THEN EXIT loop2
400 INK#5,7
410 PRINT#5,a$
420 INK#5,4
430 INPUT#5,b$
440 PRINT#ch,b$
450 IF b$=="QUIT" THEN EXIT loop2
460 END REPEAT loop2
470 CLOSE#ch
480 CLOSE#6
490 PRINT#5\\\\"press any key to end"
500 PAUSE -1
510 CLOSE#5
```

The Client

```

100 REMark IPBasic TCP Client chat program
110 OPEN#5,con_
120 CLS#5
130 OPEN#6,"TCP_"
140 PRINT#5,IP_GETHOSTNAME$;" - Making a connection...
";
150 IP_CONNECT#6,5800,"172.16.0.6"
160 PRINT#5,"Connected to ";
170 PRINT#6,IP_GETHOSTNAME$
180 INPUT#6,server$
190 PRINT#5,server$
200 PRINT#5
210 REPEAT loop
220 INPUT#5,a$
230 PRINT#6,a$
240 IF a$=="QUIT" THEN EXIT loop
250 INPUT#6,b$
260 INK#5,7
270 PRINT#5,b$
280 INK#5,4
290 IF b$=="QUIT" THEN EXIT loop
300 END REPEAT loop
310 CLOSE#6
320 PRINT#5\\\\"Press any key to end"
330 PAUSE-1
340 CLOSE#5

```

(The final part of Martin Head's "Introduction to IPBASIC" will be in the next issue Ed.)



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